Acute pancreatitis complicated by infected pseudocyst in a child with pancreas divisum

Ann. Ital. Chir., 2013 84: 459-462
Published online 19 September 2012
pii: S0003469X12018805
www.annitalchir.com

Roberto Luca Meniconi*°, Roberto Caronna*, Monica Schiratti*, Emanuele Casciani**, Gabriele Russillo°, Piero Chirletti*

University of Rome Sapienza, Rome, Italy
** Department of Surgical Sciences, U.O.C. Chirurgia Generale N*
*** Department of Radiology*
° V Scuola di Specializzazione in Chirurgia Generale

Acute pancreatitis complicated by infected pseudocyst in a child with pancreas divisum

INTRODUCTION: *Acute pancreatitis occurs less frequently in children than in adults, although it seems to be more common than has been considered in the past. There are several causes of pancreatitis in childhood: trauma, infections or structural gland anomalies as pancreas divisum.*
CASE PRESENTATION: *We report a case of non-traumatic severe acute pancreatitis in a 8-year-old girl with pancreas divisum, complicated by a rapid formation of a large infected pseudocyst which required a surgical internal drainage by a Roux-en-Y cystojejunostomy.*
DISCUSSION: *Pancreas divisum is the most common congenital anomaly of the pancreas with an incidence of 3-10% of population, and its role in causing acute or recurrent pancreatitis is still controversial. There are only sporadic observations of acute pancreatitis complicated by pseudocyst in children with pancreatic anomalies and its treatment is not standardized. Three different approaches have been described to treat a pancreatic pseudocyst: percutaneous, endoscopic or surgical drainage. We decided to perform a pseudocyst-jejunostomy because of the disease severity.*
CONLUSION: *Even in the non-invasive era, the surgical approach to treat a large complicated pseudoysts in children still represents a safe and feasible approach in emergencies as acute abdomen, bleeding or sepsis. Complications of percutaneous and endoscopic drainages are avoided and long term results are excellent.*

KEY WORDS: Acute pancreatitis, Pancreas divisum, Pancreatic pseudocyst

Introduction

Pancreatic disorders are relatively rare in children. Acute pancreatitis in childhood is caused by trauma, infections, drugs or structural anomalies [1], but it can be also idiopathic. Pancreas divisum is the most common congenital anomaly associated with acute and recurrent pancreatitis or chronic and recurrent abdominal pain, even if its role in the pathogenesis of these pancreatic diseases is not demonstrated [2,3].

The development of non-traumatic severe acute pancreatitis complicated by a rapid formation of pseudocyst is reported in few works and its treatment is not standardized. Several approaches have been described for the treatment of pseudocysts: supportive medical care, percutaneous or endoscopic drainage, surgical intervention, ERCP with stent implantation, complete pseudocyst excision [4,6].

Pervenuto in Redazione Gennaio 2012. Accettato per la pubblicazione Marzo 2012
Correspondence to: Dr. Roberto L. Meniconi, Dipartimento di Scienze Chirurgiche, Sez. Chirurgia Interdisciplinare "F. Durante", U.O.C Chirurgia Generale N, University of Rome Sapienza, Viale del Policlinico 155, 00161, Rome, Italy (E.mail: roberto.meniconi@gmail.com)

Case report

In September 2009 a 8-year-old girl presented with abdominal pain to the Department of Pediatrics of Sapienza University. She had no history of trauma, drugs usage, infection or systemic disease. Repeated blood tests showed high and progressively growing serum values of amylase (310-450 U/L) and lipase (484-620 U/L). Serology for pancreatitis-associated viruses (Coxakie, EBV, CMV) was negative. Ultrasound examinations revealed an increasing amount of intrabdominal free fluid in the peripancreatyic area and along the paracolic gutters and showed a dishomogeneous pancreatic body . Magnetic Resonance Colangiopancreatography (MRCP) showed edema of the pancreatic body and tail with a peripancreatic fluid collection, 3 cm in maximum diameter (Fig. 1A) associated with pancreas divisum and dominant dorsal duct. A diagnosis of idiopathic acute pancreatitis was made: the patient was restricted for oral feeding and medical therapy was started with total parenteral nutrition, antibiotics (Imipenem), gabexate mesilate (Foy) and somatostatine in continuous intravenous infusion, with a partial clinical response. One week later, the patient developed fever, tachycardia, acute abdominal pain and nausea. Physical examination revealed abdominal defense and palpable mass in the upper abdominal quadrants. Laboratory tests showed high serum value of C-reactive protein (72 mg/L) and leukocytosis (WBC 14.200/cc^3). A control MRCP showed a significant increase of the peripancreatic collection (from 3 to 10 cm in diameter) evolved in pseudocyst with a well defined membrane (Fig. 1B); ultrasonography showed hyperechoic material inside the cyst as for bleeding or suppuration. She underwent an emergency operation.

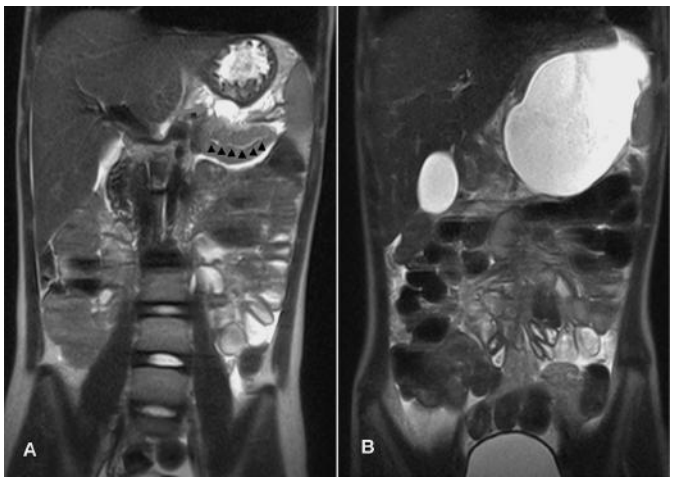

Fig. 1: A), MRCP: the initial peripancreatic collection (3 cm in diameter, arrow) and the dorsal pancreatic duct (arrowheads) are shown. B), MRCP: seven days later a 10 cm pseudocyst was developed.

At laparotomy there was intra-peritoneal free fluid and the pseudocyst was immediately identified into the lesser sac, anteriorly to the pancreas that was edematous.. After having visualized the dependent side of the cyst inferiorly to transverse mesocolon root (Fig. 2A), the cystic wall was opened at this level and the cavity was explored and completely drained: there were yellow-brownish material, partially solid, and intracystic septa which were divided (Fig. 2B). A jejunal loop was prepared at 30 cm from the Treitz and brought up to the pseudocyst to perform a Roux-en-Y pseudocyst-jejunostomy using a continuous double-layer suture in Vicryl 3-0 (Fig. 2C-D). A silastic drainage was placed close to the anastomosis.

The patient received total parenteral nutrition for three days after the operation and started to oral feeding at

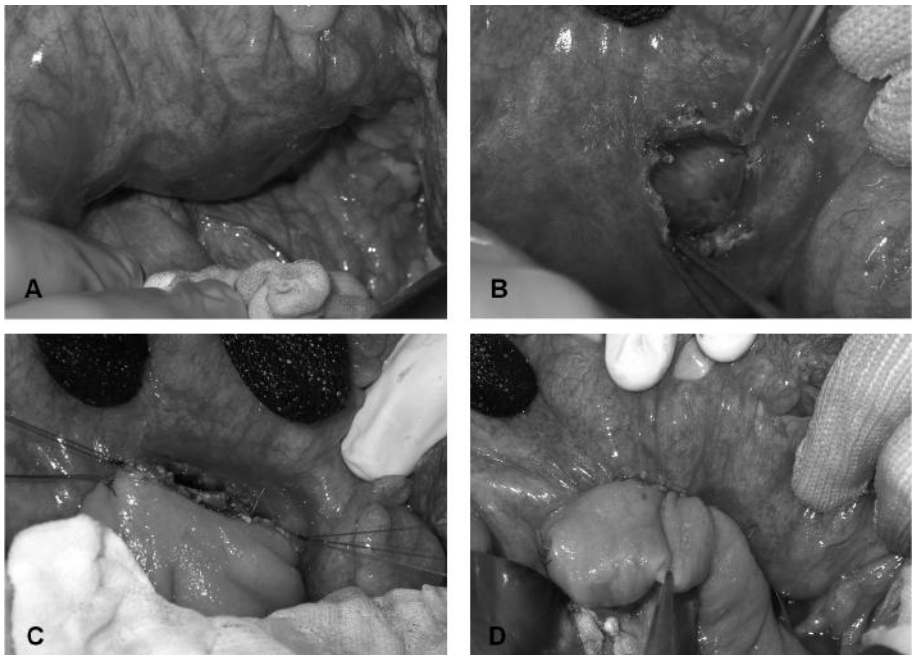

Fig. 2: A), Intraoperative view of the pseudocyst, inferiorly to the root of the transverse mesocolon. B), The pseudocyst is openened on the dependent side and drained. C), Posterior layer of the pseudocyst-jejunostomy is performed by a continuous suture with Vycril 3/0. D), The pseudocyst-jejunostomy is completed.

the fourth day. Serum amylase and lipase has resulted in values in the normal range and amylase and lipase values in the drainage fluid has become negative from the third postoperative day. A control ultrasonography performed on the seventh postoperative day revealed no collection or free fluid into the abdominal cavity, showing a well-drained pseudocyst. The histological examination of the cystic wall revealed inflammatory infiltration associated to fibrosis. The microbiological testing of the intracystic material was positive for *Escherichia coli*. The patient was discharged on the ninth day. Repeated abdominal ultrasonography and blood tests did not show any signs of acute or recurrent pancreatitis during two year follow-up.

Discussion

Different approaches to acute pancreatitis in patients with pancreas divisum have been described: medical therapy, surgical sphincteroplasty, endoscopic sphincterotomy of minor papilla or dorsal duct cannulation by ERCP [3,7-9]. However there are only sporadic observations of acute pancreatitis complicated by pseudocyst in children with pancreatic anomalies [10]. Small and asymptomatic pseudocysts can be treated only by medical care while invasive drainage is recommended for symptomatic or complicated pseudocysts (infection or bleeding) [4]. Our patient was initially treated with conservative medical care but the unexpected worsening of clinical conditions (acute abdomen) due to the rapid formation of an infected pseudocyst, required immediate interventional procedures. In these cases three different approaches have been described [4-6]: 1) percutaneous drainage is a simple and mini-invasive procedure but it is not indicated for cysts containing bloody or infected material and it is at risk of developing a pancreatic fistula or can dislocate in not compliant patients as children; 2) endoscopic drainage (transpapillary by ERCP or transmural through the stomach or duodenum) is becoming the preferred approach for large pseudocysts in children but do not ensure a complete drainage because of the high density content, it can be particularly complex in case of pancreas divisum and can be associated to bleeding, abscesses formation, peritonitis and visceral injuries, especially when performed in not referral centers by not skilled endoscopists; 3) the surgical approach, consisting in an internal drainage between the cyst and a visceral organ (cysto-jejunostomy, cysto-duodenostomy or cysto-gastrostomy), is indicated in case of complicated pseudocysts, when acute abdomen occurs or when other drainage procedures failed. We decided to perform a Roux-en-Y cystojejunostomy because the patient developed an acute abdomen likely sustained by a pseudocyst suppuration. In this cases the opening on the cyst should be done in the most dependent side in order to maximize the chances of a complete drainage; the cystic internal septa should be divided and the cyst totally empted. We also performed a continous double-layer suture between the cystic wall and the jejunal loop to minimize the risk of anastomotic leakage. In this case we also put a dual component of fibrin mesh (TachoSil®) around the cysto-jejunostomy.

Conclusion

In conclusion surgical internal drainage of large complicated pseudoysts in children represents a safe and feasible approach in emergencies as acute abdomen, bleeding or sepsis. Complications of percutaneous and endoscopic drainages are avoided, there are no stents to be removed and good long term results.

Riassunto

La pancreatite acuta è una patologia rara in età pediatrica rispetto a quella adulta, dalla quale differisce sia per eziologia che per decorso clinico. Essa infatti è causata generalmente da traumi, farmaci o anomalie congenite di cui il pancreas divisum rappresenta la forma più comune, non essendo tuttavia stato dimostrato uno stretto nesso causale con esso. Ancor più rara è l'evoluzione, nel bambino, della pancreatite acuta nelle sue forme più avanzate quali l'ascesso o la pseudocisti.

Presentiamo il caso di una pancreatite acuta severa in una bambina di 8 anni con un pancreas divisum, complicata in breve tempo dalla formazione di un'enorme pseudocisti infiammatoria che si è rapidamente ascessualizzata dando luogo ad un quadro settico e addominale acuto che ne ha richiesto l'immediato intervento di drenaggio mediante il confezionamento di una pseudocistodigiunostomia su ansa ad Y sec. Roux.

La gestione della pancreatite acuta nel bambino non è ancora stata standardizzata così come il trattamento delle sue complicanze. Da quanto si evince dalla letteratura la terapia dovrebbe sempre essere di tipo medico-intensivo, riservando le metodiche invasive alle sue complicanze quali l'ascessualizzazione, l'emorragia o la formazione di pseudocisti. In considerazione dell'alto tasso di complicanze (fistola, emorragia, drenaggio incompleto) associato alle metodiche non-chirurgiche di drenaggio della pseudocisti, quali la via percutanea e quella endoscopica, le quali non devono prescindere da una solida esperienza da parte del radiologo interventista e dell'endoscopista, abbiamo optato per la via chirurgica la quale ha permesso di risolvere rapidamente la sintomatologia clinica della paziente e lo stato settico.

References

1. Benifla M, Weizman Z: *Acute pancreatitis in childhood*. J Clin Gastroenterol, 2003; 37(2):169-72.

2. Klein SD, Affronti JP: *Pancreas divisum, an evidence-based review: Part I, pathophysiology*. Gastrointest Endosc, 2004; 60(3):419-25.

3. Neblett 3rd WW, O'Neill JA Jr: *Surgical management of recurrent pancreatitis in children with pancreas divisum.* Ann Surg 2000; 231(6):899-908.

4. Habashi S, Draganov PV: *Pancreatic psudocyst*. World J Gastroenterol, 2009; 15(1):38-47.

5. Karagüzel G, Senocak ME, Büyükpamukçu N, et al: *Surgical management of the pancreatic pseudocyst in children: A long-term evaluation*. J Pediatr Surg, 1995; 30(6):777-80.

6. Sanfey H, Aguilar M, Jones RS: *Pseudocysts of the pancreas, a review of 97 cases*. Am Surg, 994; 60(9):661-68.

7. Klein SD, Affronti JP: *Pancreas divisum, an evidence-based review: Part II, patient selection and treatment*. Gastrointest Endosc, 2004; 60(4):585-89.

8. Morgan KA, Romagnuolo J, Adams DB: *Transduodenal sphincteroplasty in the management of sphincter of Oddi dysfunction and pancreas divisum in the modern era*. J Am Coll Surg, 2008; 206(5):908-14.

9. Fogel EL, Toth TG, Lehman GA, et al.: *Does endoscopic therapy favorably affect the outcome of patients who have recurrent acute pancreatitis and pancreas divisum?* Pancreas, 2007; 34:21-42.

10. Tuggle DW, Smith EI: *Pancreas divisum, pancreatic pseudocyst, and choledochal cyst in an 8-year-old child.* J Pediatr Surg, 1989; 24(10):1111.